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(71) Applicant  
Meadowbank  
Investments Limited, 8,  
Meadow View, Sandy  
Lane, Chester, Cheshire  
CH3 5UW

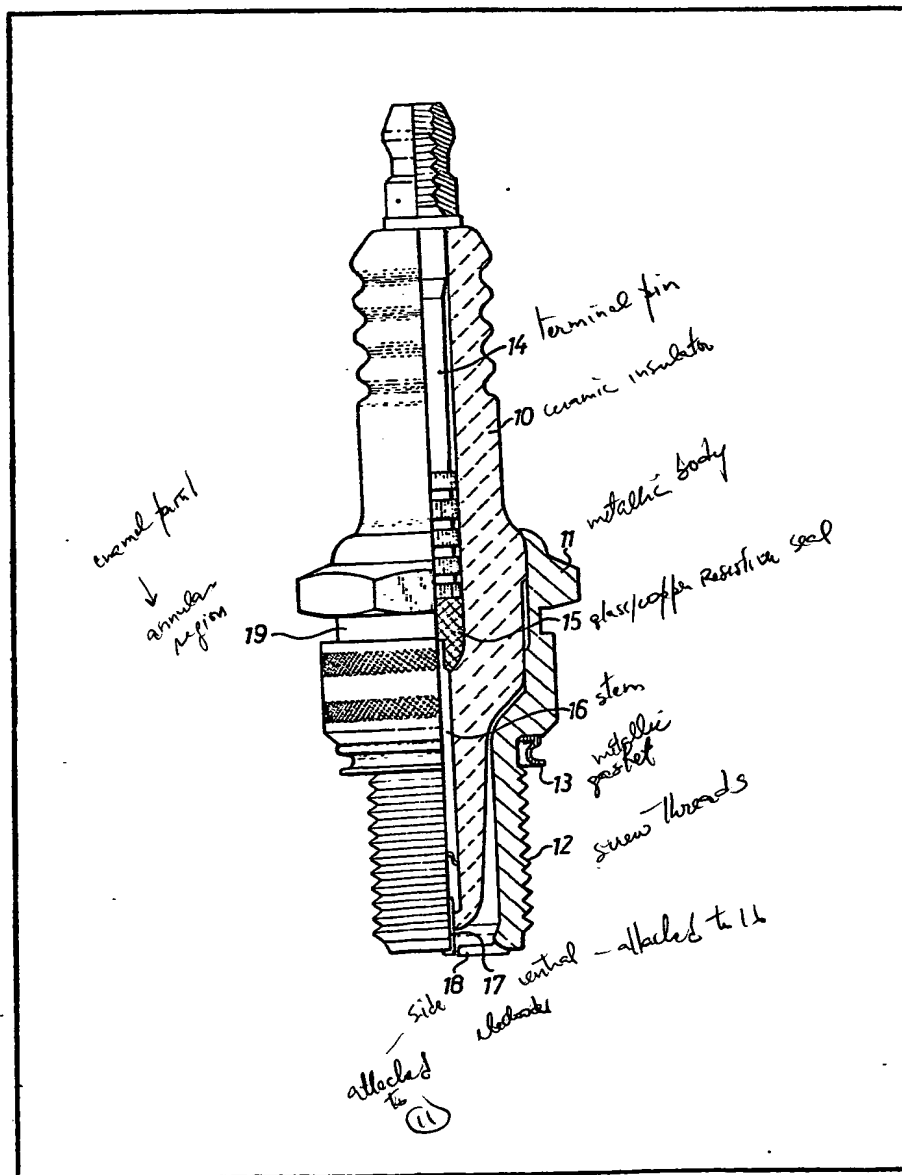
(72) Inventor  
John Stuart Hawkins

(74) Agent  
W. P. Thompson & Co.,  
Coopers Building, Church  
Street, Liverpool L1 3AB

## (54) Improvements in Sparking Plugs

(57) A long-life sparking plug with  
platinum-tungsten alloy electrodes  
(17, 18) has a heat-sensitive enamel  
paint applied to an annular region (19)

of the metallic body (11) spaced from  
the gasket (13). If the plug should be  
operated at a temperature above its  
optimum, the paint discolours or  
degrades, thus indicating that a  
different design of plug should be  
used for that particular engine.



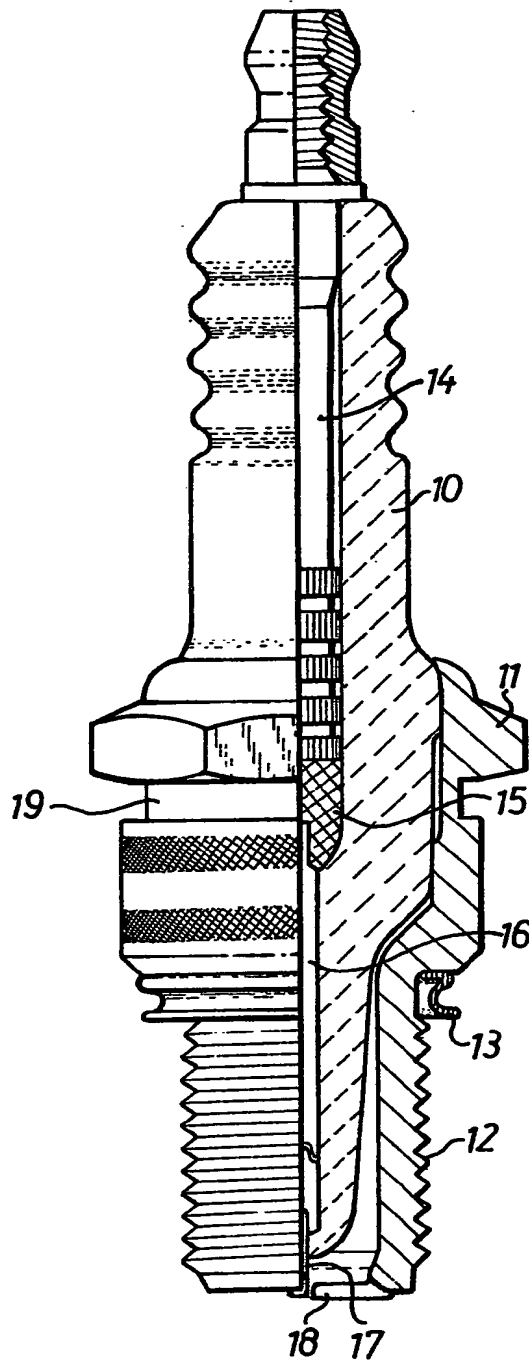
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## SPECIFICATION

## Improvements in Sparking Plugs

The present invention relates to sparking plugs and more particularly to long-life sparking plugs.

- 5 Long-life sparking plugs utilise electrodes of platinum or a platinum alloy such as a platinum tungsten alloy, and the use of such a material reduces erosion to such an extent that the sparking plug has a life of many times the life of  
10 an ordinary sparking plug. The saving in maintenance costs over the life of such a sparking plug more than offsets the initial extra capital outlay but it is still necessary that the sparking plug should operate at the correct heat if  
15 optimum engine performance is to be obtained, particularly over the full life of the sparking plug.

- According to the present invention, a long-life sparking plug has applied thereto a heat sensitive paint which discolours or degrades if the sparking  
20 plug should be operated at a temperature above the optimum temperature.

- The invention is further described by way of example with reference to the drawing which is a partially sectioned elevation of a sparking plug  
25 constructed in accordance with the present invention.

- The sparking plug comprises the usual ceramic insulator 10 fitted in a metallic body 11 which has the usual screw threads 12 at its forward end and carries a metallic gasket 13. A terminal pin 14  
30 passes through the insulator 10 and is attached by a glass/copper resistive seal 15 to a stem 16 to which the centre electrode 17 is attached. A side electrode 18 is attached to the body 11 and co-operates with the centre electrode 17 to form the usual spark gap.  
35

- The electrodes 17 and 18 are made of a platinum tungsten alloy. Whilst the use of such a material materially reduces erosion and so  
40 increases the life of the sparking plug manyfold, it is still necessary that the sparking plug should operate at the correct temperature in order that efficient combustion of the fuel/air mixture shall take place in the engine combustion chamber.  
45 Most of the heat is conducted away via the stem 16 which is of high thermal conductivity and the actual rate of heat dissipation from the sparking

plug will depend upon its dimensions and particularly on the dimensions of the stem 16.

- 50 Accordingly, different designs of sparking plug are suitable for different engines and it is necessary to find the correct sparking plug more or less by trial and error.

- In accordance with the present invention in order that the operating temperature of the plug can be readily monitored, the annular region 19 of the sparking plug body 11 is provided with a heat sensitive paint layer. Whilst special paints and like  
55 coating materials are available to give accurate response, for the purposes of the present invention conventional gloss enamel paints of the kind sold to model-makers have been found to have sufficiently narrow response range for the purposes of monitoring sparking plug  
60 temperatures. Thus, a preferred paint is red gloss enamel. If the sparking plug operates too cold, the colour is unchanged and if it operates too hot, the paint burns to a brown colour and may lift off. When the plug operates at the correct  
70 temperature, the paint will brown slightly.

## Claims

1. A long-life sparking plug for an internal combustion engine, in which a heat sensitive paint is applied to the sparking plug, the paint being discolourable or degradable when the plug is operated at a temperature above the optimum temperature.  
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2. A long-life sparking plug as claimed in claim 1, in which the heat-sensitive paint is applied to an annular region of the metallic plug body somewhat spaced from the sealing gasket.  
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3. A long-life sparking plug as claimed in claim 1 or 2, in which the heat-sensitive paint is an enamel paint.  
85
4. A long-life sparking plug as claimed in claim 3, in which the heat-sensitive paint is a glass enamel paint of the kind used by model-makers.  
90
5. A long-life sparking plug as claimed in any preceding claim, in which the electrodes are made of a platinum-tungsten alloy.
6. A long-life sparking plug, constructed and adapted to be used, substantially as herein described with reference to and as illustrated in the drawing

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